

Amendments

Please amend the above-identified application as follows:

In the Claims:

Please replace claims 1, 14, 16, 23, 24, 38, 39 & 46-50 as set forth below. All pending claims are reproduced below for the Examiner's convenience.

Sub B.
comprising:

(Amended) A method for routing messages within a network, said method

receiving a message; and

routing said message to one or more clients of said network, said routing being based on data content of said message irrespective of any destination information that may be within said message, and being resilient to router or link failure within said network without loss of said message.

2. The method of claim 1, wherein said network comprises a publish/subscribe system supporting content-based subscription, said one or more clients comprise subscribers, and wherein said routing comprises delivering said message to all subscribers requesting a uniform delivery quality of service or if unable to deliver said message to all of said subscribers requesting uniform delivery, delivering said message to none of said subscribers requesting uniform delivery.

3. The method of claim 2, wherein said delivering said message to all subscribers requesting uniform delivery comprises delivering said message to all subscribers requesting uniform delivery notwithstanding failure at one or more routers or links of said network, said delivering comprising storing said message to persistent storage at a logging node of said network prior to providing said message to said subscribers requesting uniform delivery.

4. The method of claim 1, wherein said routing comprises logging said message at at least one logging node within said network before delivering said message to said one or more clients of said network, said logging comprising storing said message in persistent storage.

5. The method of claim 4, further comprising subsequent to said logging of said message, sending a logging acknowledgment to at least one router of said network routing said message, and upon receipt of said logging acknowledgment at said at least one router, delivering said message to a client thereof, said client requiring uniform delivery and comprising one client of said one or more clients.

6. The method of claim 5, further comprising buffering said message at said at least one router of said network routing said message, said buffering occurring prior to said storing of said message at said persistent storage and when passing said message through said at least one router to said at least one logging node.

7. The method of claim 5, wherein said network comprises a plurality of routers coupled together, one of said routers comprising said logging node having said persistent storage associated therewith, said logging comprising employing said logging node having said persistent storage associated therewith to store said message and to thereafter send said logging acknowledgment back to each router of said network responsible for routing said message.

8. The method of claim 1, wherein said network comprises a spanning tree and wherein said method further comprises providing a logging node within said spanning tree for logging said message to persistent storage during routing of said message to said one or more clients of said network.

9. The method of claim 8, wherein said routing comprises employing said logging of said message to persistent storage to ensure a uniform delivery quality of service of said message to said one or more clients of said network notwithstanding failure of one or more routers or links within said network.

10. The method of claim 1, wherein said network comprises a spanning tree having a plurality of routers, said method further comprising detecting failure of a router within said tree before completing routing of said message to said one or more clients of said network,

reconfiguring said tree to replace said failed router with a new router, and automatically generating a request for retransmission of said message.

11. The method of claim 10, further comprising prior to said detecting of said failure, logging said message within persistent storage of said network and issuing a logging acknowledgment confirming storage of said message to at least one router of said tree through which said message is routed to said one or more clients.

12. The method of claim 10, wherein said automatically generating said request for retransmission of said message occurs if said new router detects from one or more of its child routers a logging number associated with said message, said logging number having been received in said logging acknowledgment confirming storage of said message.

13. The method of claim 1, wherein said routing further comprises determining within said network whether said message comprises a duplicate message to said one or more clients of said network, and if so, aborting said duplicate message such that said message is delivered to said one or more clients at most once.

a2 ^{Sub 145} (Amended) The method of claim 1, further comprising automatically informing a sender of said message when the message has not been received by the network to allow the sender to retransmit said message to the network for routing to said one or more clients of said network so that said message is delivered at least once to said one or more clients.

15. The method of claim 1, wherein said routing comprises logging said message at at least one logging node within said network before delivering said message to said one or more clients of said network, said logging comprising storing said message into persistent storage, and wherein said method further comprises subsequent to said logging of said message, sending a logging acknowledgment to at least one router of said network routing said message, and upon receipt of said logging acknowledgment at said at least one router of said network routing said message, looking up routing information for said message from a message table maintained at said at least one router, then sending said logging acknowledgment across said network using said looked up routing information, and thereafter deleting said routing information from said message table.

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16. (Amended) A method for routing messages within a routing network, said method comprising:

receiving a message;

logging the message to persistent storage within the routing network; and

after said logging, delivering said message to one or more clients of said network, wherein said logging to persistent storage prior to delivery of said message to said one or more clients of said network provides resiliency of said routing without loss of said message notwithstanding router or link failure within said network.

17. The method of claim 16, wherein said logging comprises storing said message in said persistent storage at a logging node within said routing network before said delivery of said message to said one or more clients of said network.

18. The method of claim 17, further comprising sending a logging acknowledgment to at least one router of said network routing said message after said logging of said message to said persistent storage, and upon receipt of said logging acknowledgment at said at least one router of said network routing said message, delivering said message to a client thereof, said client thereof requiring uniform delivery and comprising one client of said one or more clients.

19. The method of claim 16, wherein said network comprises a spanning tree and wherein said method further comprises providing a logging node within said spanning tree for said logging of said message to persistent storage during routing of said message to said one or more clients of said network.

20. The method of claim 19, wherein said routing comprises employing said logging of said message to persistent storage to ensure a uniform delivery quality of service of said message to said one or more clients of said network notwithstanding failure of one or more routers or links within said network.

21. The method of claim 16, wherein said routing network comprises a spanning tree having a plurality of routers, said method further comprising detecting failure of a router within

said tree before completing routing of said message to said one or more clients of said network, thereafter reconfiguring said tree to replace said failed router with a new router, and automatically generating a request for retransmission of said message from said persistent storage.

22. The method of claim 16, further comprising determining within said routing network whether said message comprises a duplicate message to said one or more clients of said network, and if so, aborting said duplicate message such that said message is delivered to said one or more clients at most once.

23. (Amended) The method of claim 16, further comprising automatically informing a sender of said message when said message has not been received by the network to allow the sender to retransmit the message to the network for routing to said one or more clients of said network so that said message is delivered at least once to said one or more clients.

24. (Amended) A system of routing messages within a network, said system comprising

means for receiving a message; and

means for routing said message to one or more clients of said network, said routing being based on data content of said message irrespective of any destination information that may be within said message, and wherein said means for routing is resilient to router or link failure within said network without loss of said message.

25. The system of claim 24, wherein said network comprises a publish/subscribe system supporting content-based subscription, and wherein said one or more clients comprise subscribers, with said message being received from a publisher.

26. The system of claim 25, wherein said means for routing comprises means for delivering said message to all subscribers requesting a uniform delivery quality of service or if unable to deliver said message to all of said subscribers requesting uniform delivery, for delivering said message to none of said subscribers requesting uniform delivery.

27. The system of claim 26, wherein said means for routing delivers said message to said subscribers requesting uniform deliver notwithstanding failure at one or more routers or links of said network, and wherein said system further comprises means for logging said message to persistent storage prior to delivery thereof to said subscribers requesting uniform delivery.

28. The system of claim 24, wherein said means for routing comprises means for logging said message to at least one logging node within said network before delivering said message to said one or more clients of said network, said means for logging comprising means for storing said message in persistent storage.

29. The system of claim 28, further comprising means for sending a logging acknowledgment to at least one router of said network routing said message after said means for logging stores said message in persistent storage, and wherein said system further comprises, at said at least one router of said network routing said message, means for delivering said message to a client thereof upon receipt of said logging acknowledgment, said client requiring uniform delivery and comprising one client of said one or more clients.

30. The system of claim 29, further comprising means for buffering said message at said at least one router of said network routing said message, said buffering occurring prior to said storing of said message at said persistent storage by said means for logging.

31. The system of claim 29, wherein said network comprises a plurality of routers coupled together, one of said routers comprising said logging node having said persistent storage associated therewith, and wherein said means for logging comprises means for employing said logging node having said persistent storage associated therewith to store said message and to thereafter send said logging acknowledgment back to each router of said network responsible for routing said message.

32. The system of claim 24, wherein said network comprises a spanning tree and wherein said system further comprises a logger node within said spanning tree for logging said message to persistent storage during routing of said message to said one or more clients of said network.

33. The system of claim 24, wherein said means for routing comprises means for employing said logger node to log said message to persistent storage to ensure a uniform delivery quality of service of said message to said one or more clients of said network notwithstanding failure of one or more routers or links within said network.

34. The system of claim 24, wherein said network comprises a spanning tree having a plurality of routers, and further comprising means for detecting failure of a router within said tree before completing routing of said message to said one or more clients of said network, and means for reconfiguring said tree to replace said failed router with a new router, and means for automatically generating a request for retransmission of said message.

35. The system of claim 34, further comprising means for logging said message within persistent storage of said network and for issuing a logging acknowledgment confirming storage of said message to at least one router of said tree through which said message is routed to said one or more clients.

36. The system of claim 35, wherein said means for automatically generating a request for retransmission of said message comprises means for detecting a logging number associated with said message stored at one or more child routers of said new router.

37. The system of claim 24, wherein said means for routing further comprises means for determining within said network whether said message comprises a duplicate message to said one or more clients of said network, and if so, for aborting said duplicate message such that said message is delivered to said one or more clients at most once.

as ~~38~~ (Amended) The system of claim 24, further comprising means for automatically informing a sender of said message when said message has not been received by the network to allow the sender to retransmit said message to the network for routing to said one or more clients of said network so that said message is delivered at least once to said one or more clients.

39. (Amended) A system of routing messages within a routing network, said system comprising:

means for receiving a message;

means for logging the message to persistent storage within the routing network;
and

05 means for delivering said message to one or more clients of said network after said logging of said message to persistent storage, wherein said logging to persistent storage prior to delivery of said message to said one or more clients of said network provides resiliency of said routing without loss of said message notwithstanding router or link failure within said network.

40. The system of claim 39, wherein said means for logging comprises means for storing said message in said persistent storage at a logging node within said routing network before said delivery of said message to said one or more clients of said network.

41. The system of claim 40, further comprising means for sending a logging acknowledgment to at least one router of said network routing said message after said logging of said message to said persistent storage, and means for thereafter delivering said message to a client of said at least one router of said network routing said message, said client requiring uniform delivery and comprising one client of said one or more clients.

42. The system of claim 39, wherein said routing network comprises a spanning tree, and said means for logging comprises a logging node within said spanning tree for logging said message to persistent storage during routing of said message to said one or more clients of said network.

43. The system of claim 42, wherein said means for routing comprises means for employing said logging of said message to persistent storage to ensure a uniform delivery quality of service of said message to said one or more clients of said network notwithstanding failure of one or more routers or links within said network.

44. The system of claim 39, wherein said routing network comprises a spanning tree having a plurality of routers, and wherein said system further comprises means for detecting failure of a router within said tree before completing routing of said message to said one or more clients of said network, and for thereafter configuring said tree to replace said failed router with a

new router, and for automatically generating a request for retransmission of said message from said persistent storage.

45. The system of claim 39, further comprising means for determining within said routing network whether said message comprises a duplicate message to said one or more clients of said network, and if so, for aborting said duplicate message such that said message is delivered to said one or more clients at most once.

46. (Amended) The system of claim 39, further comprising means for automatically informing a sender of said message when said message has not been received by the network to allow the sender to retransmit the message to the network for routing to said one or more clients of said network so that said message is delivered at least once to said one or more clients.

at C1 SUB A (Amended) A system for routing messages comprising:

a network adapted to receive and log a message to persistent storage; and

said network comprising one or more routers adapted to route said message to one or more clients of said network, wherein said routing of said message by said one or more routers is based on data content of said message irrespective of any destination information that may be within the message, and is resilient to router or link failure within the network without loss of said message.

48. (Amended) A system for routing messages comprising:

a network adapted to receive a message;

a logger node within said network for logging said message to persistent storage;

and

said network comprising one or more routers for delivering said message to one or more clients of said network, wherein said logging of said message to persistent storage occurs prior to delivery of said message to said one or more clients of said

network, thereby providing resiliency of said routing without loss of said message notwithstanding router or link failure within said network.

49. (Amended) An article of manufacture, comprising:

at least one computer usable medium having computer readable program code means embodied therein for effecting routing of messages within a network, the computer readable program code means in the article of manufacture comprising:

computer readable program code means for causing a computer to effect receiving a message; and

computer readable program code means for causing a computer to effect routing said message to one or more clients of said network, said routing being based on data content of said message and being resilient to router or link failure within said network without loss of said message.

50. (Amended) An article of manufacture, comprising:

at least one computer usable medium having computer readable program code means embodied therein for effecting routing of messages within a routing network, the computer readable program code means in the article of manufacture comprising:

computer readable program code means for causing a computer to effect receiving a message;

computer readable program code means for causing a computer to effect logging said message to persistent storage within the routing network; and

computer readable program code means for causing a computer to effect delivering said message to one or more clients of said network after said logging thereof, wherein said logging to persistent storage prior to delivery of said message to one or more clients of said network provides resiliency of said routing

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without loss of said message notwithstanding router or link failure within said network.
